

GEOGRAPHICAL DISTRIBUTIONAL LIST OF ICHTHYOFAUNA OF THE GARHWAL HIMALAYA WITH SOME NEW RECORDS¹

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(With a text-figure)

This paper deals with the fish fauna and their distribution in different river systems of the Garhwal Himalaya. In all 69 species of fishes have been reported. Of them many fishes inhabit the coldwater streams but some are fishes of the foothills and plains.

INTRODUCTION

The fish fauna of the neighbouring Himachal Pradesh, Jammu and Kashmir Himalaya have been studied by Heckel (1844), Silas (1960), Das & Subla (1964), Malik (1966), Saxena (1968) and Sehgal *et al.* (1971). There are many reports on the fish fauna of other parts of Uttar Pradesh including those on the fishes of Muzaffarnagar (Mahajan 1961), Moradabad (Singh 1974), Meerut (Sinha & Shiromani 1953), Aligarh (Sehgal 1973), Eastern U.P. (Srivastava 1968), Pilibhit (Motwani & Saigal 1974), Banda (Grover & Gupta 1977), Corbett National Park (Husain 1975), and Kanpur (Verma *et al.* 1962), etc. The fish fauna of the adjoining Kumaon hills has been described by Hora (1937), Menon (1949a, 1949b, 1962, 1971), Chaudhury & Khandelwal (1960), and Pant (1970). But the reports on the fish fauna of the Garhwal hills have been very scanty and limited to Dehradun district only (Hora & Mukerji 1936, Das 1960, Lal & Chatterjee 1962, Singh 1964, Tilak & Husain 1973).

As no information was available on the

fish fauna of the remaining four districts, namely Pauri, Tehri, Chamoli and Uttarkashi, an extensive survey was made by the authors. In the earlier papers (Badola & Pant 1973; Badola 1975; Badola & Singh 1977a & b) 18 species from Uttarkashi, 43 species from Pauri, 28 species from Chamoli, and 33 species from Tehri district were reported. Recently Badola & Singh (1981) described the fish and fisheries of the River Alaknanda and Singh & Dobriyal (1982) published the first report on the occurrence of *Botia geto* in the River Alaknanda of the Garhwal Himalaya. The present paper aims at describing the distribution of fishes in different rivers of the Garhwal Himalaya (Table 1) and the 27 new species which were not included in the earlier reports.

PHYSIOGRAPHIC FEATURES

The Garhwal Himalaya forms the western part of the Uttar Pradesh hills. This region is situated between the latitudes 29°26'-31°28'N and longitude 77°49'-80°6'E with a total area of about 30,090 km². The north region extends up to the snow-clad peaks making the Indo-Tibetan boundary. The river Tons separates it from Himachal Pradesh in the west, and the Kumaon hills in the east. Geographically, the

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ICHTHYOFAUNA OF THE GARHWAL HIMALAYA

TABLE I

DISTRIBUTION OF FISHES IN IMPORTANT RIVER SYSTEMS OF THE GARHWAL HIMALAYA

Name of the species	Alaknanda	Birahi	Nandakini	Pinder	Mandakini	Bhagirathi	Jamuna	Ganga	Nayar	Bhilangana	Hinwal	Khoh & Malan	Rawasan	Song & Suswa
1. <i>Schizothorax richardsonii</i> (Gray)	a	a	a	a	a	a	a	c	c	c	c	n	n	n
2. <i>Schizothorax sinuatus</i> Heckel	a	a	a	a	a	a	a	c	c	c	c	n	n	n
3. <i>Schizothorax plagiostomus</i> Heckel	a	a	a	a	a	a	a	c	c	c	c	n	n	n
4. <i>Schizothorax curvifrons</i> Heckel	a	c	c	c	c	c	c	c	n	c	n	n	n	n
5. <i>Schizothorax niger</i> Heckel	c	c	c	c	c	c	c	c	c	n	c	n	n	n
6. <i>Schizothorax intermedius</i> McClelland	c	c	c	c	c	c	c	c	n	c	n	n	n	n
7. <i>Schizothorax micropogon</i> Heckel	c	c	c	c	c	c	c	c	n	c	n	n	n	n
8. <i>Schizothoraichthys progastus</i> (McClelland)	c	c	c	c	c	c	c	c	r	r	n	n	n	n
9. <i>Schizothoraichthys esocinus</i> (Heckel)	c	c	c	c	c	c	c	c	r	r	n	n	n	n
10. <i>Tor tor</i> (Ham.)	c	r	r	c	c	c	c	a	c	r	c	r	r	c
11. <i>Tor putitora</i> (Ham.)	c	r	r	c	c	c	c	a	c	r	c	r	r	c
12. <i>Tor chilinoides</i> (McClell.)	c	c	c	c	c	c	c	r	c	c	c	n	n	r
13. <i>Labeo dero</i> (Ham.)	c	n	r	c	c	c	c	a	c	c	c	c	c	c
14. <i>Labeo dyocheilus</i> (McClell.)	c	n	r	c	c	c	c	a	c	c	c	c	c	c
15. <i>Labeo boga</i> (Ham.)	n	n	n	n	n	n	n	c	c	n	c	c	c	c
16. <i>Puntius chola</i> (Ham.)	n	n	n	n	n	n	n	c	r	n	c	c	c	c
17. <i>Puntius ticto</i> (Ham.)	n	n	n	n	n	n	n	c	c	n	c	a	a	a
18. <i>Puntius conchoniis</i> (Ham.)	n	n	n	n	n	n	n	c	c	n	c	a	a	a
19. <i>Puntius sarana</i> (Ham.)	n	n	n	n	n	n	n	a	r	n	r	c	c	c
20. <i>Puntius phutunio</i> (Ham.)	n	n	n	n	n	n	n	c	n	n	n	c	c	c
21. <i>Puntius sophore</i> (Ham.)	n	n	n	n	n	n	n	c	n	n	n	c	c	c
22. <i>Garra prashadi</i> (Hora)	c	n	n	c	c	c	c	c	a	c	a	a	a	a
23. <i>Garra lamta</i> Ham.	c	r	c	c	c	c	c	c	e	r	a	a	a	a
24. <i>Garra gotyla gotyla</i> (Gray)	c	r	c	c	c	c	c	c	c	c	a	a	a	a
25. <i>Crossocheilus latius latius</i> (Ham.)	c	r	c	c	c	c	c	c	c	c	c	c	c	c
26. <i>Chagunius chagunio</i> (Ham.)	n	n	n	n	n	n	n	c	c	n	c	c	c	c
27. <i>Barilius bola</i> (Ham.)	r	n	n	n	n	c	c	a	c	r	c	c	c	c
28. <i>Barilius bendelisis</i> (Ham.)	c	r	r	c	c	c	c	a	a	c	a	a	a	a
29. <i>Barilius barna</i> (Ham.)	c	n	r	c	c	r	c	a	a	c	a	a	a	a
30. <i>Barilius barila</i> (Ham.)	c	n	r	c	c	r	c	a	a	c	a	a	a	a
31. <i>Barilius vagra</i> (Ham.)	c	n	r	c	c	r	c	a	a	c	a	a	a	a
32. <i>Barilius shacra</i> (Ham.)	n	n	n	n	n	n	n	r	r	n	r	r	r	n
33. <i>Rasbora daniconius</i> (Ham.)	n	n	n	n	n	n	n	c	c	n	c	c	c	c
34. <i>Danio (Danio) aequipinnatus</i> (McClell.)	n	n	n	n	n	n	r	a	r	n	c	a	a	a
35. <i>Danio (Brachydanio) rerio</i> (Ham.)	n	n	n	n	n	n	n	c	n	n	n	c	c	c
36. <i>Danio (Danio) devario</i> (Ham.)	r	n	n	n	n	n	n	a	r	n	r	a	a	a
37. <i>Esomus danricus</i> (Ham.)	n	n	n	n	n	n	n	c	r	n	n	c	c	c
38. <i>Botia dario</i> (Ham.)	r	n	n	n	n	r	r	c	c	r	c	c	c	n
39. <i>Lepidocephalus guntea</i> (Ham.)	r	n	n	n	n	n	n	a	r	n	r	a	a	a
40. <i>Noemacheilus botia</i> (Ham.)	n	n	n	n	n	n	n	c	n	n	r	a	a	a

TABLE 1 (CONTID.)

Name of the species	Alaknanda	Birahi	Nandakini	Pinder	Mandakini	Bhagirathi	Jamuna	Ganga	Nayar	Bhiliangana	Hinwal	Khoh & Malan	Rawasan	Song & Suswa
41. <i>Noemacheilus montanus</i> (McClell.)	a	a	a	a	a	a	a	r	r	a	r	n	n	n
42. <i>Noemacheilus rupicola</i> (McClell.)	a	a	a	a	a	a	a	a	a	a	a	a	a	a
43. <i>Noemacheilus bevani</i> Gunther	a	a	a	a	a	a	a	a	a	a	a	a	a	a
44. <i>Noemacheilus savona</i> (Ham.)	a	a	a	a	a	a	a	a	a	a	a	a	a	a
45. <i>Noemacheilus multifasciatus</i> Day	a	a	a	a	a	a	c	c	c	c	c	n	n	n
46. <i>Noemacheilus scaturigina</i> (McClell.)	n	n	n	n	n	n	n	c	n	n	c	c	c	c
47. <i>Noemacheilus zonatus</i> (McClell.)	c	c	c	c	c	c	c	n	n	n	n	n	n	n
48. <i>Noemacheilus corica</i> (Ham.)	n	n	n	n	n	n	n	n	n	n	n	r	r	a
49. <i>Balitora brucei</i> Gray	n	n	r	r	r	n	n	n	r	r	n	n	n	n
50. <i>Amblyceps mangois</i> Ham.	r	n	n	n	n	n	n	r	n	n	r	r	r	r
51. <i>Glyptothorax cavia</i> (Ham.)	c	c	c	c	c	c	c	c	c	c	c	r	r	n
52. <i>Glyptothorax pectinopterus</i> (McClell.)	c	c	c	c	c	c	c	a	a	c	a	a	a	c
53. <i>Glyptothorax madraspatanum</i> (Day)	c	c	c	c	c	c	n	n	c	n	n	n	n	n
54. <i>Glyptothorax trilineatus</i> Blyth	c	c	c	c	c	c	n	n	c	n	n	n	n	n
55. <i>Glyptothorax telchitta</i> (Ham.)	n	n	n	n	n	n	n	n	n	n	n	c	c	n
56. <i>Glyptothorax brevipinnis</i> (Hora)	c	c	c	c	c	c	c	c	c	c	c	c	c	n
57. <i>Glyptothorax conirostris</i> (Steindachner)	c	c	c	c	c	c	c	c	r	c	r	n	n	n
58. <i>Pseudecheneis sulcatus</i> (McCell.)	c	c	c	c	c	c	c	r	r	c	r	n	n	n
59. <i>Clupisoma garua</i> (Ham.)	r	n	n	r	n	r	r	c	r	r	r	n	n	n
60. <i>Mystus vittatus</i> (Bloch)	n	n	n	n	n	n	n	c	n	n	n	c	c	c
61. <i>Channa gachua</i> (Ham.)	n	n	n	n	n	n	n	c	n	n	n	a	a	a
62. <i>Xenentodon cancila</i> (Ham.)	n	n	n	n	n	n	n	n	n	n	n	c	c	c
63. <i>Mastacembelus armatus</i> (Lac.)	n	n	n	n	n	r	r	c	c	c	c	a	a	a
64. <i>Botia geto</i> (Ham.)	r	-	-	-	-	-	-	-	-	-	-	-	-	-

a = abundant, c = common, n = nil, r = rare

Garhwal Himalaya has been divided into: (i) The Greater Himalaya with snow peaks having a height of about 7817 m (Nanda Devi) above the sea level, and (ii) the lower Himalaya (middle) with peaks and valleys, and (iii) the Siwaliks with Siwalik ranges and the "Bhabar" (foothills). The 'bhabar' region has a height of about 325 m above the sea level. The Garhwal region comprises the districts of Chamoli, Uttarkashi, Pauri, Tehri and Dehradun, the first two being border districts.

Most of the holy rivers of India owe their

origin to the snow peaks of Chamoli and Uttarkashi districts of this region. There are a large number of snow-fed rivers and streams such as the Jamuna, the Alaknanda, the Bhagirathi, the Jar ganga, the Asi ganga, the Dhauli ganga, the Mandakini, the Pinder, the Nandakini, and the Ganga (at Deoprayag the two parent streams, namely the Alaknanda and the Bhagirathi, meet and form the Ganga). Besides the snow-fed rivers there are many non-snow-fed rivers such as the Birahi, the Nayar, the Khoh, the Malan, the Tal, the

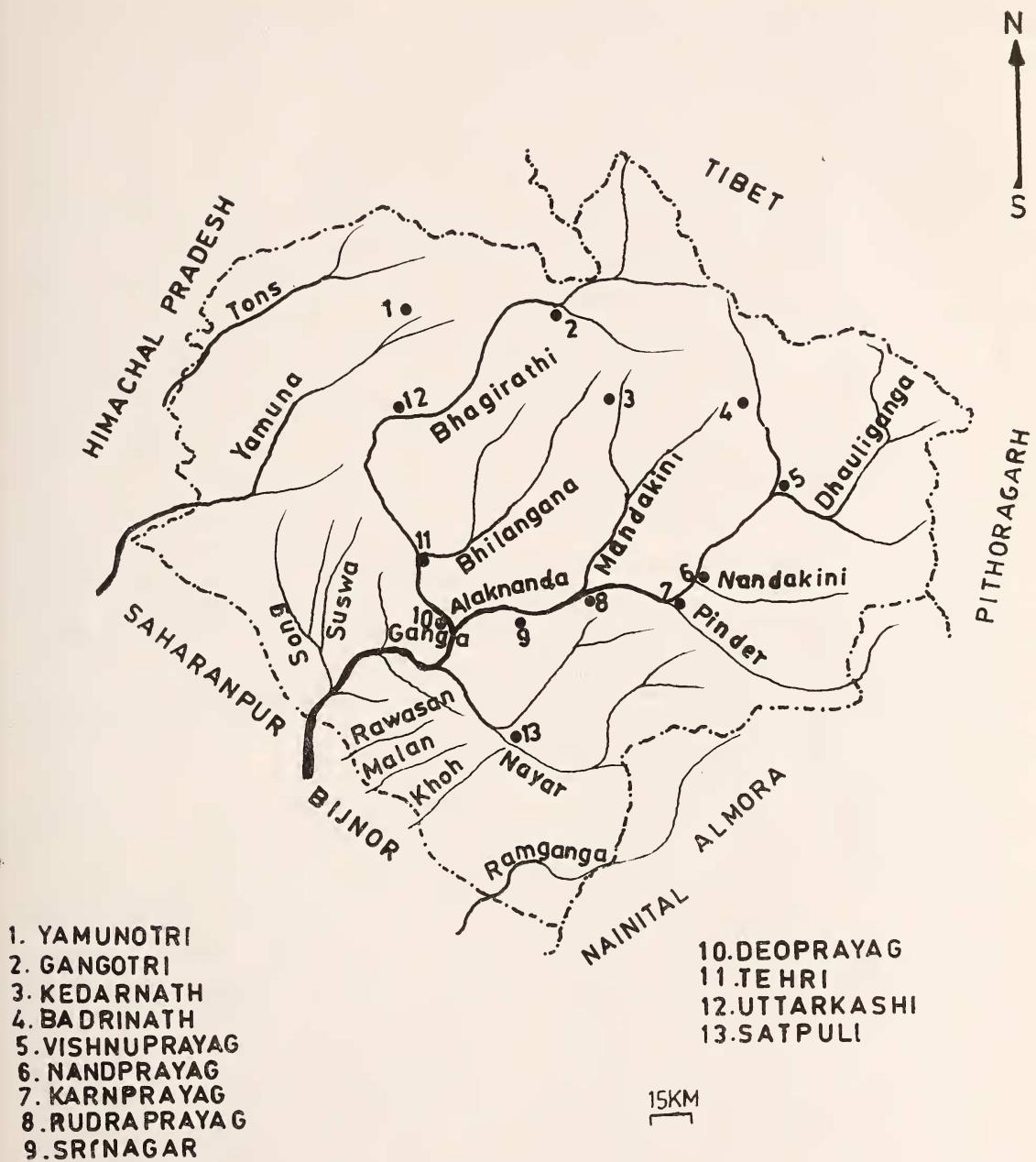


Fig. 1. Garhwal Himalaya river systems.

Rawasan, the Bhilangana, the Hinwal, the Gular, the Lastar, the Badiyar, the Song, and the Suswa, etc. and hundreds of rivulets. They all contain a very rich and colourful fish fauna. However, many of them have so far remained unexplored, because in the past the various regions of the Garhwal Himalaya were inaccessible due to lack of transport facilities. But now many areas are well linked with motorable roads and this helped the authors in surveying the fish fauna of the Garhwal Himalaya.

DISCUSSION

Fish fauna of the Garhwal includes a large number of coldwater fishes. *Schizothorax*, *Schizothoraichthys* and *Pseudecheneis* species are the fish which always prefer the snow-fed Greater Himalayan rivers and streams, such as the Bhagirathi, the Jamuna, the Alaknanda, the Nandakini, the Pinder, and the Mandakini, etc. *Garra*, *Crossocheilus*, *Noemacheilus* and *Glyptothorax* species are also commonly found in the snow-fed and the non-snow-fed rivers from the Greater Himalaya to the foothills (Siwalik) of this region. *Tor tor*, *T. putitora*, and *Labeo dyocheilus* are not found throughout the year in the snow-fed rivers. These species start their migration from the Siwalik ranges to the snow-fed rivers from March to June for the purpose of breeding and thereafter they return to their native places. *Tor chilonoides* and *Balitora brucei* are also found in the high altitude rivers. *Barilius* species always prefer non-snow-fed rivers but they were also observed in the sidewaters of the snow-fed rivers of the Greater Himalayas. They migrate towards the uplands in the rainy season and inhabit and breed in the sidewaters of the Alaknanda, the Bhagirathi, and the Jamuna etc. *Botia dario*, *Barilius bola*, *Chagunius chagunio*, *Clupiosoma garua* and *Mastacembelus armatus* were frequently seen during the

rainy season in the lower reaches of the snow-fed rivers.

Some of the fishes (*Labeo boga*, *Puntius sarana*, *P. chola*, *P. ticto*, *P. sophore*, *P. phutunio*, *P. conchonius*, *Rasbora daniconius*, *Danio* sp., *Esomus danricus*, *Lepidocephalus guntea*, *Noemacheilus botia*, *N. corica*, *Amblyceps mangois*, *Mystus vittatus*, *Channa gachua*, and *Xenentodon cancila*) could not be seen in the snow-fed rivers. These fishes were common in the foothills (Siwalik ranges) adjoining the plains. They were common in the rivers like Khoh, Malan, Rawasan, Hinwal, Tal, Gular, and the backwaters of the Ganga river.

The exotic fish *Salmo trutta fario* (brown Trout) was introduced at Kaldayani hatchery (Uttarkashi) from Kashmir in 1910. This hatchery is situated at an elevation of 1540 m on the bank of the snow-fed river Asiganga, a tributary of the Bhagirathi; *Salmo gairdneri* (rainbow trout) was introduced at Talwari hatchery (Chamoli) in 1964. This hatchery is situated at an elevation of 1770 m and is fed by a natural spring. *Cyprinus carpio* has been introduced recently at Talwari hatchery from Bhimtal (Nainital).

Twenty seven fishes which were not mentioned in the earlier papers and are being reported now are: *Salmo trutta fario*, *Salmo gairdneri*, *Schizothorax curvifrons*, *S. niger*, *S. intermedius*, *S. micropogon*, *Schizothoraichthys esocinus*, *Labeo boga*, *Puntius sophore*, *P. chola*, *P. sarana*, *P. phutunio*, *Barilius bola*, *Rasbora daniconius*, *Esomus danricus*, *Cyprinus carpio* var. *communis*, *Cyprinus carpio* var. *specularis*, *Botia geto*, *B. dario*, *Noemacheilus scaturigina*, *Amblyceps mangois*, *Clupiosoma garua*, *Mystus vittatus*, *Glyptothorax cavia*, *G. brevipinnis*, *Euglyptosternum lineatum* and *Xenentodon cancila*.

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REFERENCES

- BADOLA, S. P. (1975): Fish fauna of the Garhwal hills. Part II. *Ind. J. Zool.* 16(1): 57-70.
- & PANT, M. C. (1973): Fish fauna of the Garhwal hills. Part I. *Ind. J. Zool.* 14(1): 37-44.
- & SINGH, H. R. (1977a): Fish fauna of the Garhwal hills. Part III (Chamoli district). *Ind. J. Zool.* 18(2): 119-122.
- (1977b): Fish fauna of the Garhwal hills. Part IV (Tehri district). *Ind. J. Zool.* 18(2): 115-118.
- (1981): Fish and Fisheries of the river Alaknanda. *Proc. Nat. Acad. Sci., India B51(2)*: 133-142.
- CHAUDHURY, H. S. & KHANDELWAL, O. P. (1960): The fish survey of Nainital district. *Vigyan Parishad Anusandhan Patrika* 3: 139-145.
- DAS, S. M. (1960): The fishes of Doon valley. *Uttar Bharti*.
- & SUBLA, B. A. (1964): The Ichthyofauna of Kashmir. Part II. The speciation of Kashmir fishes with two new records of species. *Ichthyologica* 3(1-2): 57-62.
- DAY, F. (1878): The Fishes of India: being a Natural History of the Fishes known to inhabit the Seas and Freshwaters of India, Burma and Ceylon. Vols. 1 & 2. xx + 778, Pl. cxcv.
- GROVER, S. P. & GUPTA, S. K. (1977): Fish and Fisheries of Banda district (U.P.). *Proc. Nat. Acad. Sci., India.* 47B(IV): 204-218.
- HECKEL, J. J. (1844): Fishes Kaschmir's in Huggel, C.A.A. *Von Kaschmir und Das Reich Der Seik.* Bd. 4. abdh 2: 351-392.
- HORA, S. L. (1937): Notes on fishes in the Indian Museum. On a collection of fish from Kumaon Himalayas. *Rec. Indian Mus.* 39: 338-341.
- & MUKERJI, D. D. (1936): Fishes of the Eastern Doon, United Provinces with introduction and remarks on Mahseer Fisheries. *ibid.* 38: 133-146.
- HUSAIN, A. (1975): Fish fauna of Corbett National Park, Uttar Pradesh. *Cheetal* 17(2): 39-42.
- LAL, M. B. & CHATTERJEE, P. (1962): Survey of eastern Doon fishes with certain notes on their biology. *J. Zool. Soc. India.* 14(1-2): 229-243.
- MAHAJAN, C. L. (1961): Fish fauna of Muza-farnagar district, Uttar Pradesh. *J. Bombay nat. Hist. Soc.* 62(3): 440-454.
- MALIK, G. M. (1966): A revision of the fishes of the genus *Oreinus* McClelland from Kashmir and in the Indian Museum., Calcutta with description of new variety. *Kashmir Science.* 3(1-2): 126-144.
- MENON, A.G.K. (1949a): Fishes of Kumaon Himalaya. *J. Bombay nat. Hist. Soc.* 48(3): 535-542.
- (1949b): Fishes from the Kosi Himalaya, Nepal. *Rec. Indian Mus.* 47(3-4): 231-237.
- (1962): A distributional list of fishes of the Himalayas. *J. Zool. Soc., India.* 14(1-2): 23-32.
- (1971): Taxonomy of fishes of the genus *Schizothorax* Heckel with the description of a new species from Kumaon Himalayas. *Rec. Zool. Surv India.* 63(1-4): 195-208.
- MOTWANI, M. P. & SAIGAL, B. N. (1974): Fish fauna of Sardasagar reservoir in Pilibhit (U.P.) and some recommendations for development of reservoir fisheries. *Indian J. Fish.* 21(1): 109-119.
- PANT, M. C. (1970): Fish fauna of the Kumaon hills. *Rec. Zool. Surv. India.* 64(1-4): 85-96.
- SEHGAL, J. K. (1973): Fish and fisheries of Aligarh with a note on the fish catches. *J. Inland Fish. Soc. India.* 5: 23-28.
- SAXENA, D. B. (1968): Fish and fisheries of Jammu and Kashmir State. Part II. Systematic account of the fishes of the State. *Ichthyologica* 7 (1-2): 48-65.
- SEHGAL, K. L., SHUKLA, J. P. & SHAH, K. L. (1971): Observations on fisheries of Kangra valley and adjacent areas with special reference to Mahseer and other fishes. *J. Inland Fish. Soc. India.* 3: 63-71.
- SILAS, E. G. (1960): Fishes from the Kashmir Valley. *J. Bombay nat. Hist. Soc.* 57(1): 66-77.
- SINGH, H. R. & DOBRIYAL, A. K. (1982): First report on the occurrence of *Botia geto* (Ham.) in the river Alaknanda of the Garhwal Himalaya. *Proc. Nat. Acad. Sci., India.* B 52(2): 137-139.

SINGH, P. P. (1964): Fishes of the Doon valley
Ichthyologica 3(1-2): 86-92.

SINGH, S. P. (1974): Fishes of Moradabad
(U.P.). *Ind. J. Zoot.* 15(2): 75-78.

SINHA, B. M. & SHIROMANI, A. A. (1953): The
fishes of Meerut. *Rec. Indian Mus.* 51: 61-65.

SRIVASTAVA, G. J. (1968): Fishes of eastern Uttar
Pradesh. Vishwavidyalaya Prakashan Varanasi: 1-
163.

TILAK, R. & HUSAIN, A. (1973): Notes on fishes
of Doon valley, Uttar Pradesh I. Distributional and
morphological studies on some Glyptosternoid fishes
(Sisoridae). *Rec. Zool. Surv. India*, 67(1-4): 391-
399.

VERMA, S. S., CHITRAY, B. B. & SAXENA, D. B.
(1962): Fishes of Kanpur district. *Proc. nat. Acad.
Sci. India*, 32 B(3): 213-232.